William M. Lee

Curriculum Vitae

Contact Information

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Education

Ph.D.	Georgia State University, Atlanta, Ga.	December 1999
Dissertation Topic:	Nuclear Dependence of J/ψ and ψ' Production	
M.S.	Georgia State University, Atlanta, Ga.	August 1997
B.S.E.E.	Univ. of South Carolina, Columbia, S.C.	December 1988

Professional Experience

Research Associate	Florida State University	2000-present
Research/Teaching Asst.	Georgia State University	1993-1999
Engineer	Columbia Research Corporation	1990-1991
Instructor	Midlands Technical College	1989-1990
Teaching Assistant	University of South Carolina	1987-1990

Research Experience:

- The D$\emptyset$ Experiment
  D$\emptyset$ is a worldwide collaboration of scientists conducting research on the fundamental nature of matter. This research focuses on precise studies of interactions of protons and antiprotons at the highest available energies. It involves an intense search for subatomic clues that reveal the character of the building blocks of the universe.

  - Triggermeister
    Since August of 2003, I have been Triggermeister for D$\emptyset$. In this post I provide all of the trigger lists for general running, commissioning new devices, and monitoring the operation of the detector. I have developed new trigger lists which allow D$\emptyset$ to run the experiment at higher luminosities without affecting our ability to collect good physics data, balancing the needs of the different physics groups.
  - Silicon Track Trigger(STT)
    Until January 2004, I was the STT commissioning coordinator. Under my watch the STT grew from a set of boards in a single test crate to an integrated part of the data acquisition system. In addition, I was responsible for writing all of the downloading and monitoring software for the STT system using a combination of VxWorks, EPICS, C, and Python.
  - B Physics
    I am presently analysing D$\emptyset$ data in a search for pentaquarks. Since summer of 2003, evidence for pentaquark states has been observed by some experiments while others have reported no observation. This analysis is searching for the Θ^+ and Θ_c in the pK^0_s and pD^* channels, respectively. I have also assisted in quarkonia polarization studies in the

di-muon channel and the understanding and analysis of the properties of the X(3782) particle.

- Data Aquisition and Online Systems
  For 2001-2002 I was the data acquisition system(DAQ) manager. I was responsible for ensuring the smooth operation of the DØ experiment's DAQ. I coordinated and was lead trainer of the DØ DAQ shifter team. From 2000-2003 I was the Online Systems liason to the calorimeter detector and one of a handful of online experts.
- Linux System Manager
  I am a senior system manager for the Clued0 cluster. Clued0 is a 300 node desktop linux cluster which provides enough processing power to analyze hundreds of gigabytes of data per day.
- Administration
  The DØ collaboration relies on its members to provide its administration. I spent two years on the offline resources board, which manages all of the offline resources at DØ. I have also participated on two Editorial Boards, "The Measurement of the Top mass at D0" and "The Top Cross-section in the ALL Jets Channel"

- FNAL E866/NuSea
  The NuSea experiment measured the antiquark flavor asymmetry in the nucleon sea. NuSea also studied J/ψ polarization and measured the nuclear dependence for dimuons ranging in mass from 0.5 to 8.0 GeV/c.
  - Charmonia physics
    I performed the complete analysis of J/ψ and ψ' nuclear dependence data, starting from optimizing the trigger system to the final analysis and calculations. This analysis will provide insight into nuclear suppression effects on the J/ψ. Some of these effects are absorption by the nucleus or by comovers, shadowing of the initial partons, and energy loss and multiple scattering in either the initial or final state. Since J/ψ suppression is a proposed signature of the Quark-Gluon Plasma, this data is very important in interpreting J/ψ production in ultra-relativistic heavy-ion collisions.
  - Data Acquisition System (DAQ)
    Georgia State contributed the "third level trigger" system to NuSea. This system used multiple digital signal processors (DSP's) on a single board in the DAQ's VME bus. The DSP's performed a relatively complicated data analysis in real time before the data is written to tape. I designed, tested, and implemented the system. This involved programming the DSP's to perform the communication between each other and the rest of the DAQ. In this process I became one of the few experts in the VME portion of the DAQ.
  - E866 Spectrometer
    I was active in all aspects of running the experiment. I performed many of the upgrades and repairs prior to the start of the run, as well as maintenance and monitoring of the spectrometer during data collection.

- BNL RD94
  RD94 at Brookhaven National Lab helped in the design of the muon identifier for PHENIX. I assisted in monitoring the experiment and performed detector maintenance and repair.

Teaching Experience:

- Georgia State University
  I taught the senior/graduate level electronics lab for four years. I have also taught many of the general physics laboratories.
- Midlands Technical College
  I taught algebra based physics courses and their labs.
- University of South Carolina
  I supervised the entire introductory level Astronomy program. I directed the optical and radio observatories. I edited several physics and astronomy study guides.

Engineering Experience:

- Columbia Research Corporation(CRC)

  I assisted in the validation and verification effort for the Advanced Tactical Air Command Central program. CRC also upgraded the Sensor Monitoring Central (SMC) and the Communication and Data Analysis Central (CDAC) shelters which were components of the Intelligence Analysis System. I was a team leader for the the upgrade of these shelters. I tested and repaired the shelter radios and receivers. The SMC and CDAC shelters were used and performed well in Operation Desert Storm.

Publications in Journals

V. M. Abazov *et al.* [D0 Collaboration], "A precision measurement of the mass of the top quark," Nature **429**, 638 (2004).

V. M. Abazov *et al.* [D0 Collaboration], "Observation and properties of the X(3872) decaying to J/psi pi+ pi- in p anti-p collisions at s**(1/2) = 1.96-TeV," Submitted to Phys. Rev. Lett., arXiv:hep-ex/0405004.

V. M. Abazov *et al.* [D0 Collaboration], "Search for doubly-charged Higgs boson pair production in the decay to mu+ mu+ mu- mu- in p anti-p collisions at s**(1/2) = 1.96-TeV," Submitted to Phys. Rev. Lett., arXiv:hep-ex/0404015.

V. M. Abazov *et al.* [D0 collaboration], "Search for Pair Production of Light Scalar Top Quarks in p-pbar Collisions at sqrts=1.8 TeV," Phys. Rev. Lett. **93**, 011801 (2004)

V. M. Abazov *et al.* [D0 collaboration], "Search for 3- and 4-body decays of the scalar top quark in p anti-p collisions at s**(1/2) = 1.8-TeV," Phys. Lett. B **581**, 147 (2004).

V. M. Abazov *et al.* [D0 Collaboration], "Observation of diffractively produced W and Z bosons in anti-p p collisions at s**(1/2) = 1800-GeV," Phys. Lett. B **574**, 169 (2003).

V. M. Abazov *et al.* [D0 Collaboration], "Search for new particles in the two-jet decay channel with the D0 detector," Phys. Rev. D **69**, 111101 (2004)

V. M. Abazov *et al.* [D0 Collaboration], "Search for narrow t anti-t resonances in p anti-p collisions at s**(1/2) = 1.8-TeV," Phys. Rev. Lett. **92**, 221801 (2004).

T. H. Chang *et al.* [FNAL E866/NuSea collaboration], "J/psi polarization in 800-GeV p Cu interactions," Phys. Rev. Lett. **91**, 211801 (2003).

V. M. Abazov *et al.* [D0 Collaboration], "Search for large extra dimensions in the monojet + missing-E(T) channel at D0," Phys. Rev. Lett. **90**, 251802 (2003).

J. C. Webb *et al.* [NuSea Collaboration], "Absolute Drell-Yan dimuon cross sections in 800-GeV/c p p and p d collisions," Submitted to Phys. Rev. Lett., arXiv:hep-ex/0302019.

V. M. Abazov *et al.* [D0 Collaboration], "Multiple jet production at low transverse energies in p anti-p collisions at s**(1/2) = 1.8-TeV," Phys. Rev. D **67**, 052001 (2003).

V. M. Abazov *et al.* [D0 Collaboration], "Search for the production of single sleptons through R-parity violation in p anti-p collisions at s**(1/2) = 1.8-TeV," Phys. Rev. Lett. **89**, 261801 (2002).

V. M. Abazov *et al.* [D0 Collaboration], "Search for mSUGRA in single electron events with jets and large missing transverse energy in p anti-p collisions at s**(1/2) = 1.8-TeV," Phys. Rev. D **66**, 112001 (2002).

V. M. Abazov *et al.* [D0 Collaboration], "t anti-t production cross section in p anti-p collisions at s**(1/2) = 1.8-TeV," Phys. Rev. D **67**, 012004 (2003).

V. M. Abazov *et al.* [D0 Collaboration], "Improved W boson mass measurement with the D0 detector," Phys. Rev. D **66**, 012001 (2002).

V. M. Abazov *et al.* [D0 Collaboration], "A direct measurement of W boson decay width," Phys. Rev. D **66**, 032008 (2002).

V. M. Abazov *et al.* [D0 Collaboration], "Search for leptoquark pairs decaying to nu nu + jets in p anti-p collisions at s**(1/2) = 1.8-TeV," Phys. Rev. Lett. **88**, 191801 (2002).

V. M. Abazov *et al.* [D0 Collaboration], "Search for R-parity violating supersymmetry in dimuon and four-jets channel," Phys. Rev. Lett. **89**, 171801 (2002).

V. M. Abazov *et al.* [D0 Collaboration], "The inclusive jet cross-section in p anti-p collisions at s**(1/2) = 1.8-TeV using the k(T) algorithm," Phys. Lett. B **525**, 211 (2002).

V. M. Abazov *et al.* [D0 Collaboration], "A search for the scalar top quark in p anti-p collisions at s**(1/2) = 1.8-TeV," Phys. Rev. Lett. **88**, 171802 (2002).

V. M. Abazov *et al.* [D0 Collaboration], "Subjet multiplicity of gluon and quark jets reconstructed with the k(T) algorithm in p anti-p collisions," Phys. Rev. D **65**, 052008 (2002).

V. M. Abazov *et al.* [D0 Collaboration], "Measurement of the ratio of differential cross sections for W and Z boson production as a function of transverse momentum in p anti-p collisions at s**(1/2) = 1.8-TeV," Phys. Lett. B **517**, 299 (2001).

V. M. Abazov *et al.* [D0 Collaboration], "The ratio of the isolated photon cross sections at s**(1/2) = 630-GeV and 1800-GeV," Phys. Rev. Lett. **87**, 251805 (2001).

V. M. Abazov *et al.* [D0 Collaboration], "Search for new physics using QUAERO: A general interface to D0 event data," Phys. Rev. Lett. **87**, 231801 (2001).

V. M. Abazov *et al.* [D0 Collaboration], "Search for single top quark production at D0 using neural networks," Phys. Lett. B **517**, 282 (2001).

V. M. Abazov *et al.* [D0 Collaboration], "Search for first-generation scalar and vector leptoquarks," Phys. Rev. D **64**, 092004 (2001).

R. S. Towell *et al.* [FNAL E866/NuSea Collaboration], "Improved measurement of the anti-d/anti-u asymmetry in the nucleon sea," Phys. Rev. D **64**, 052002 (2001).

M. J. Leitch *et al.* [FNAL E866/NuSea collaboration], "Measurement of J/psi and psi' suppression in p A collisions at 800-GeV/c," Phys. Rev. Lett. **84**, 3256 (2000).

M. A. Vasilev *et al.* [FNAL E866 Collaboration], "Parton energy loss limits and shadowing in Drell-Yan dimuon production," Phys. Rev. Lett. **83**, 2304 (1999).

J. C. Peng *et al.* [E866/NuSea Collaboration], "anti-d/anti-u asymmetry and the origin of the nucleon sea," Phys. Rev. D **58**, 092004 (1998).

E. A. Hawker *et al.* [FNAL E866/NuSea Collaboration], "Measurement of the light antiquark flavor asymmetry in the nucleon sea," Phys. Rev. Lett. **80**, 3715 (1998).

Conference and Workshop Presentations

W.M. Lee, *V13 Trigger Status,* Summer Physics Workshop, FermiLab, Batavia, Illinois, 27 July 2004.

W.M. Lee, *Trigger Meister Report,* Run 2B Trigger Software Workshop, FermiLab, Batavia, Illinois, 14 July 2004.

W.M. Lee, *The V13 Trigger List,* All DØ Meeting, FermiLab, Batavia, Illinois, 9 July 2004.

W.M. Lee, *The V13 Trigger List,* Run IIb Trigger Software Workshop, FermiLab, Batavia, Illinois, 11 May 2004.

W.M. Lee, *B physics at D0,* Lake Louise Winter Institute, Lake Louise, Canada, 15-21 February 2004.

W.M. Lee, *Data Quality and the Beam at D0,* Invited Plenary Talk, D0 Workshop, Beaune, France, 16-20 June 2003.

W.M. Lee, *Introduction to Luminosity and Beam effects at D0,* Chair Beam Session, D0 Workshop, Beaune, France, 16-20 June 2003.

W.M. Lee, *L2 STT status and quality monitoring* D0 Workshop, Beaune, France, 16-20 June 2003.

W.M. Lee, *An Impact Parameter Trigger for the D0 Experiment,* Computing in High Energy Physics, San Diego, California, 24-28 March 2003.

W.M. Lee, *CLuED0: Clustered Linux Environment at D0,* Computing in High Energy Physics, San Diego, California, 24-28 March 2003.

W.M. Lee, *Measurement of Polarization Observables in Υ and ψ Production with 800 GeV $p-Cu$ Collisions* , April Meeting of the American Physical Society, Albuquerque, New Mexico, 20-23 April, 2002, Bull. Am. Phys. Soc. **47** 123 (2002).

W.M. Lee, *The D0 Silicon Track Trigger,* April Meeting of the American Physical Society, Albuquerque, New Mexico, 20-23 April, 2002, Bull. Am. Phys. Soc. **47** 57 (2002).

W.M. Lee, *Nuclear Dependence in J/ψ and ψ' Production,* Centennial Meeting of the American Physical Society, Atlanta, Georgia, 20-26 March, 1999, Bull. Am. Phys. Soc. **44** 1417 (1999).

W.M. Lee, *Nuclear Dependence in J/ψ and ψ' Production,* Fall Meeting, Division of Nuclear Physics, American Physical Society, Santa Fe, New Mexico, 28-31 October, 1998, Bull. Am. Phys. Soc. **43** 1550 (1998).

W.M. Lee *et al.*, *Nuclear Dependence of J/ψ and ψ' Production,* International Nuclear Physics Conference 1998, **Nucl. Phys. A** (in press), B. Frois, ed., Paris, France, 24-28 August, 1998.

W.M. Lee, *Measurement of the J/ψ Nuclear Dependence: Fermilab E866,* APS/AAPT Joint April Meeting Program, Columbus, Ohio, 18-21 April, 1998, Bull. Am. Phys. Soc. **43** 1179 (1998).

W.M. Lee, *Nuclear Effects on J/ψ Production,* New Perspectives Conference, Fermi National Lab,

Batavia, Illinois, 18 July, 1997.

Publications in Conference Proceedings

C. A. Gagliardi *et al.* [FNAL E866/NuSea Collaboration], "Measurement Of The Absolute Drell-Yan Dimuon Cross Sections In 800-Gev/C P P And P D Collisions," Nucl. Phys. A **721**, 344 (2003).

M. A. Vasilev *et al.* [FNAL-E866/NuSea Collaboration], "J/Psi, Psi' And Drell-Yan Nuclear Dependence In 800-Gev/C P - A Collisions," AIP Conf. Proc. **549**, 346 (2002).

J. C. Webb *et al.* [FNAL-E866/NuSea Collaboration], "Measurement Of Drell-Yan Cross-Sections And Flavor Asymmetry In The Nucleon Sea," AIP Conf. Proc. **549**, 532 (2002).

P. E. Reimer *et al.*, "Measurement of polarization observables in Upsilon and psi production with 800-GeV p + Cu collisions," *Prepared for International Nuclear Physics Conference (INPC 2001): Nuclear Physics and the 21st Century, Berkeley, California, 30 Jul - 3 Aug 2001*

V. M. Abazov *et al.* [D0 Collaboration], "Improved D0 W boson mass determination," arXiv:hep-ex/0106018.

V. M. Abazov *et al.* [D0 Collaboration], "The inclusive jet cross section in p anti-p collisions at s**(1/2) = 1.8-TeV using the k(T) algorithm," arXiv:hep-ex/0106032.

V. M. Abazov *et al.* [D0 Collaboration], "Search for leptoquark pairs decaying to nu nu + jets in p anti-p collisions at s**(1/2) = 1.8-TeV," arXiv:hep-ex/0106065.

C. Gagliardi *et al.* [FNAL E866 and NuSea Collaborations], "Light Antiquark Flavor Asymmetry In The Nucleon Sea," Nucl. Phys. A **663**, 284 (2000).

R. E. Tribble *et al.* [FNAL E866/NuSea Collaboration], "Nuclear Dependence Of Drell-Yan And J/Psi Production In Fnal E866," Nucl. Phys. A **663**, 761 (2000).

M. A. Vasilev *et al.* [FNAL E866/NuSea Collaboration], "Proton induced Drell-Yan dimuon production at 800-GeV," *Prepared for International Conference and 8th Blois Workshop on Elastic and Diffractive Scattering (EDS 99), Protvino, Russia, 27 Jun - 2 Jul 1999*

B. A. Mueller *et al.* [E866/NuSea Collaboration], "Measurement of the light quark flavor asymmetry in the nucleon sea," *In *Bloomington 1999, Physics with a high luminosity polarized electron ion collider* 174-185.*

W. M. Lee *et al.* [E866/NuSea Collaboration], "Nuclear dependence of J/psi and psi' production," *Prepared for Centennial Celebration and Meeting of the American Physical Society (Combining Annual APS General Meeting and the Joint Meeting of the APS and the AAPT), Atlanta, Georgia, 20-26 Mar 1999*

M. J. Leitch *et al.* [NuSea Collaboration], "J/Psi And Psi' Suppression In P A Collisions At 800-Gev/C," Nucl. Phys. A **661**, 554 (1999).

C.A. Gagliardi *et al.*, $\bar{d}/\bar{u}$ *Asymmetry in the Nucleon Sea,* International Nuclear Physics Conference 1998, **Nucl. Phys. A**, B. Frois, ed., Paris, France, 24-28 August, 1998.

M.J. Leitch *et al.*, *Vector Meson Production and Nuclear Effects in FNAL E866,* XIV ISHEPP, Dubna, Russia, Aug, 1998.

C.A. Gagliardi *et al.*, $\bar{d}/\bar{u}$ *Asymmetry in the Nucleon Sea,* XIV ISHEPP, Dubna, Russia, Aug, 1998.

J.C. Peng *et al.*, *Measurements of the Light Quark Flavor Asymmetry in the Nucleon Sea,* ICHEP 98, Vancouver, B.C., Canada, July, 1998.

R.S. Towell *et al.*, *New Results from Fermilab E866: Flavor Asymmetry in the Nucleon Sea and Nuclear Effects in* J/ψ *Production,* **XXXIII'nd Moriond Conference: '98 QCD and High Energy Hadronic Interactions,** J. Tran Thanh Van, ed., Moriond, France, March 1998 (Editions Frontiere, 1998)

M.A. Vasiliev *et al.*, *Measurement of the Flavor Asymmetry in the Nucleon Sea,* Lake Louise Winter Institute on Quantum Chromodyanmics, Lake Louise, Alberta, Feb, 1998.

R.E. Tribble *et al.*, *Measurement of the* $\bar{u}/\bar{d}$ *Asymmetry in the Proton,* ISS97, Tashkent, Oct, 1997.

P.E. Reimer *et al.*, *A Preliminary Measurement of the* $\overline{u}/\overline{d}$ *Asymmetry in the Proton Sea,* **AIP Conference Proceedings 412: Intersections between Particle and Nuclear Physics,** T.W. Donnelly, ed., Big Sky, Montana, May 1997 (Woodbury, NY: AIP Press, 1997) 643.

E.A. Hawker *et al.*, *Measuring the* $\bar{u}/\bar{d}$ *Asymmetry in the Proton Sea: Fermilab E866*, **XXXII'nd Moriond Conference: '97 QCD and High Energy Hadronic Interactions,** J. Tran Thanh Van, ed., Moriond, France, March 1998 (Editions Frontiere, 1998) 387.

Internal and Technical Reports

V. M. Abazov *et al.* [D0 Collaboration], "Run IIb upgrade technical design report," FERMILAB-PUB-02-327-E

W.M. Lee, *More Information on Tracks that Pass Through the STOV Board,* DØ Note 3987, (October 2001)

W.M. Lee, *Calculating the Nuclear Dependence from the E866 Data Sets,* (April 1998)

W.M. Lee, M.J. Leitch, P.L. McGaughey, *Making Trigger Matrix Files for E866,* (April 1997)

W.M. Lee, *Observations About the Event Monitor and Packets,* (March 1997)

W.M. Lee, X. He, *Level 3 Input Controller Implementation Notes* and six other technical notes describing the Level 3 trigger modules, (April-May 1996)

W.M. Lee, *Test Plan and Procedures for the Sensor Monitoring Central,* (1990)

W.M. Lee, *Sensor Monitoring Central Engineering Change Proposal,* (1990)

W.M. Lee, *Technical Specification Deficiencies of the Advanced Tactical Air Command Central,* (1990)

Awards and Memberships

1997-1998 Outstanding Advanced Senior Graduate Student Award, Georgia State University

Member: American Physical Society
Member: $\Sigma\Pi\Sigma$